Check List 9(4): 849–850, 2013

ISSN 1809-127X (available at *www.checklist.org.br*)

Check List
Journal of species lists and distribution

NOTES ON GEOGRAPHIC DISTRIBUTION

Introduction of *Leptodactylus labyrinthicus* (Spix, 1824) (Anura: Leptodactylidae) in central Amazonia, Brazil

Vinícius T. de Carvalho [1,2,3*], Rafael de Fraga [2], André Luiz F. da Silva [2] and Richard C. Vogt [2]

1 Universidade Federal do Amazonas (UFAM), Instituto de Biociências, Programa de Pós-graduação em Biodiversidade e Biotecnologia da Amazônia Legal, Rede Bionorte, Av. General Rodrigo Otávio Jordão Ramos, 3000, Setor Sul, Mini-campus, Bloco M. CEP 69077-000. Manaus, AM, Brazil.
2 Instituto Nacional de Pesquisas da Amazônia (INPA), Programa de Pós-graduação em Ecologia, Av. Efigênio Salles, 2239, Aleixo. CEP 69060-020. Manaus, AM, Brazil.
3 Laboratório de Evolução e Genética Animal (LEGAL), Departamento de Biologia, Universidade Federal do Amazonas, Av. Gen. Rodrigo Octávio Jordão Ramos, 3000. CEP 69077-000. Manaus, AM, Brazil.
* Corresponding author: E-mail: *viniciustc@ig.com.br*

ABSTRACT: This note reports new records of *Leptodactylus labyrinthicus* in central Amazonia (Manaus, Brazil). We found a small population on the banks of a small polluted tributary of the Negro river. The knowledge about the natural species range suggests that the population was introduced, probably carried to Manaus for commercial production.

The Pepper-frog *Leptodactylus labyrinthicus* is distributed from southern Amazon basin, to the southeastern and southern Brazil, extending westward to Paraguay and Bolivia (Heyer *et al.*, 2004; Heyer 2005; Santos and Haddad 2006; Frost 2011). The species occurs mainly near wetlands, and has been recorded mostly in open habitats. The Amazon rainforest and the Amazon river are apparently barriers to natural dispersal of the species, but some occasional records from introduced populations were obtained in central Amazonia (*e.g.* Lima *et al.* 2008).

In this study we report four specimens (Figure 1) of *L. labyrinthicus* (three males: INPA-H 28645, 137.7 mm SVL; INPA-H 28647, 162.9 mm SVL and INPA-H 28644, 166.7 mm SVL; and one female: INPA-H 28646, 147.1 mm SVL) found in Manaus (Figure 2), Amazonas, Brazil (03°06'18" S, 60°01'43" W; 03°07'34" S, 60°01'60" W and 03°06'50" S, 60°01'56" W). The specimens were found on 21 August 2011, during nocturnal visual searching for amphibians and reptiles on the banks of a polluted tributary of the Negro river. The specimens were collected under IBAMA/SISBIO permit n. 4558-1/518309.

The only population of *L. labyrinthicus* identifying in the north of the Amazon river was recorded in the coastal zone of Venezuela, but was later described as the new taxon *Leptodactylus turimiquensis* (Heyer 2005). The Amazon rainforest and the Amazon river are apparently barriers to natural dispersal of *L. labyrinthicus*, but geographic range of the species has been expanded by anthropogenic dispersal corridors. Thus, we believe that the population living in Manaus was introduced, and we present a brief description for it origin.

Large frogs are used for human consumption in Brazil, and some species have been bred in captivity. In the 90's farmers led *L. labyrinthicus* from southeastern Brazil to Manaus, with the intention of commercial production. However, this activity failed due to lack of management skills, and the frogs were released or escaped (A. P. Lima, personal communication). The city of Manaus has grown significantly in recent decades, and many areas potentially suitable for breeding sites of amphibians have been

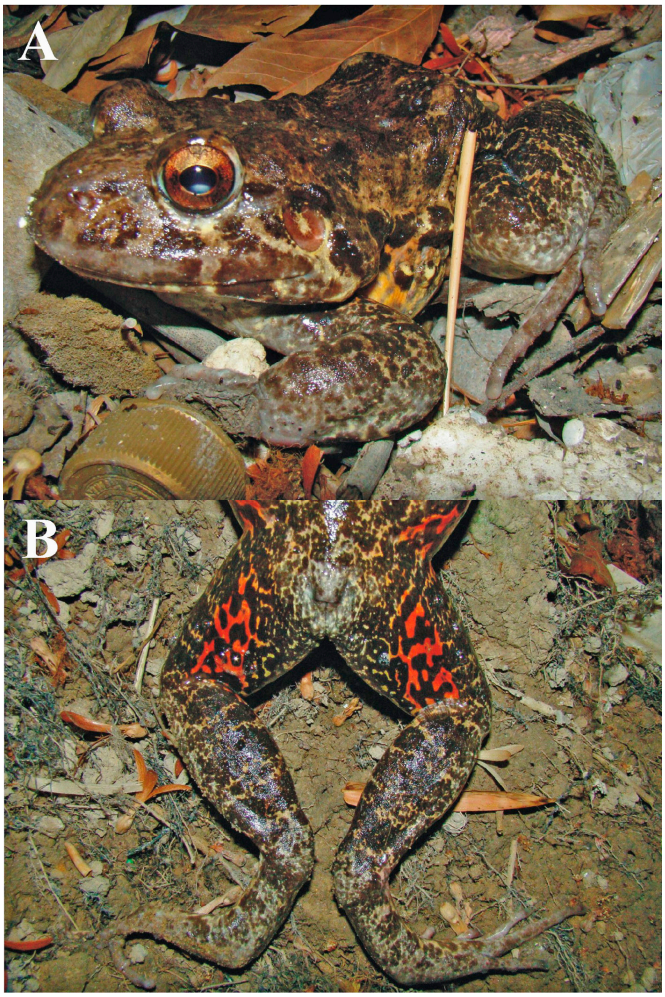

FIGURE 1. Adult male of *Leptodactylus labyrinthicus* (A) from Manaus, Amazonas, Brazil (INPA-H 28644) and detail of posterior thigh of the same specimen (B). Photos: Vinícius T. Carvalho.

disturbed by human occupation. However, *L. labyrinthicus* is apparently very tolerant to pollution, we found a population living in an area where garbage and sewage are constantly discharged.

Leptodactylus labyrinthicus is a large species, and it is a generalist-opportunist predator, feeds on many groups of invertebrates and small vertebrates (Cardoso and Sazima 1977; Vaz-Silva *et al*. 2003; Toledo *et al*. 2007; Fonseca *et al.* 2012). Through dispersal corridors opened by human occupation, the species can reach edges of forest in the outskirts of Manaus, as the Ducke Reserve (Lima *et al.* 2008). We have no data about the current population size living in central Amazonia, but population growth can be a problem for conservation of native species in the future.

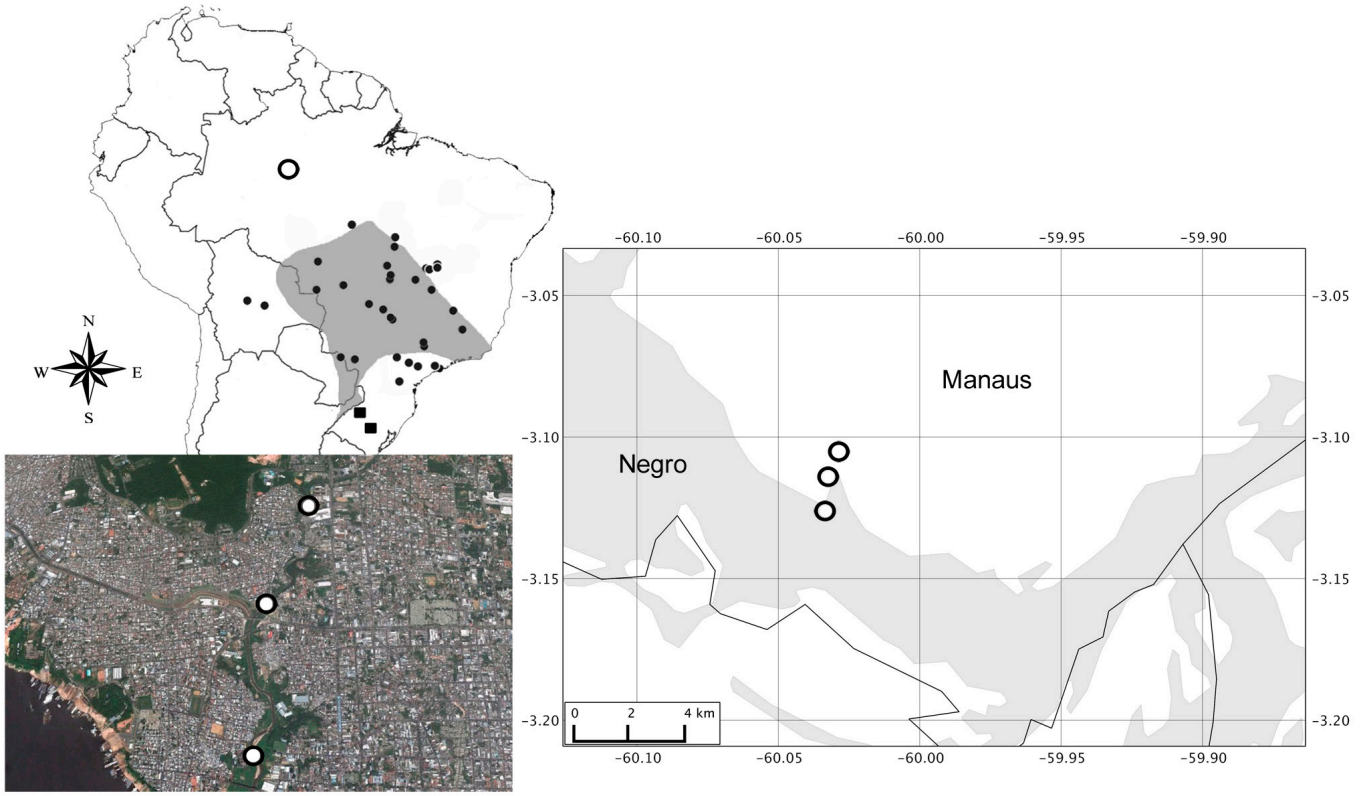

Figure 2. Geographic distribution of *Leptodactylus labyrinthicus*. Closed circles = Heyer 2005; squares = Santos and Haddad 2006; gray area = Heyer *et al*. 2004 (IUCN red list); open circles = this study. The satellite image of Manaus was downloaded from Google Earth on July 26, 2013.

Acknowledgments: We are grateful to W. R. Heyer, M. Gordo and S. A. A. Morato for critically reading the manuscript. A. P. Lima provide us information about the introduction of Pepper-frogs in Manaus. J. Farias and G. Pinho helped us with the English translation. Fundação de Amparo a Pesquisa do Estado do Amazonas (FAPEAM) and Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES) provided scholarships to V. T. de Carvalho and R. de Fraga, respectively.

Literature Cited

Cardoso, A.J. and I. Sazima. 1977. Batracofagia na fase adulta e larvária da rã-pimenta, *Leptodactylus labyrinthicus* (Spix,1824) - Anura, Leptodactylidae. *Ciência e Cultura (SBPC)* 29(10): 1130-1132.

Fonseca, E., F. Lanna, R. Carvalho and M. Gehara. 2012. Predation on *Sibynomorphus neuwiedi* (Serpentes: Dipsadidae) by *Leptodactylus labyrinthicus* (Anura: Leptodactylidae) in southeastern Brazil. *Herpetology Notes* 5: 167-168.

Frost, D.R. 2011. *Amphibian Species of the World: an Online Reference. Version 5.5* (31 January, 2011). Electronic Database accessible at http://research.amnh.org/vz/herpetology/amphibia/American Museum of Natural History, New York, USA. Captured on 23 April 2012.

Heyer, W.R. 2005. Variation and taxonomic clarification of the large species of *Leptodactylus pentadactylus* species group (Amphibia: Leptodactylidae) from middle America, northern South America, and Amazonia. *Arquivos de Zoologia* 37(3): 269-348.

Heyer, R., A. Mijares and D. Baldo. 2004. *Leptodactylus labyrinthicus*. *In* IUCN 2012. *IUCN Red List of Threatened Species. Version 2012.1*. Electronic database accessible at www.iucnredlist.org. Captured on 27 August 2012.

Lima, A.P., W.E. Magnusson, M. Menin, L.K. Erdtmann, D.J Rodrigues, C. Keller and W. Hödl. 2008. *Guia de sapos da Reserva Adolpho Ducke, Amazônia central (Guide to the frogs of Reserva Adolpho Ducke, central Amazonia)*. Manaus: Áttema. 168 p.

Santos, T.G. and C.F.B. Haddad. 2006. Amphibia, Anura, Leptodactylidae, *Leptodactylus labyrinthicus*: rediscovery and distribution extension in the state of Rio Grande do Sul, Brazil. *Check List* 2(1): 22-23.

Toledo, L.F., R.S. Ribeiro and C.F.B. Haddad. 2007. Anurans as prey: an exploratory analysis and size relationships between predators and their prey. *Journal of Zoology* 271: 170-177.

Vaz-Silva, W., H.L.R. Silva and N.J. Silva Jr. 2003. *Leptodactylus labyrinthicus* (Labyrinth Frog). Diet. *Herpetological Review* 34: 359.

Received: February 2013
Accepted: August 2013
Published online: September 2013
Editorial responsibility: Pedro Bernardo